Proceedings of the Iowa Academy of Science

Volume 24 | Annual Issue Article 64

1917

Chlorotic Corn (A Progress Report)

W. H. Davis

CHLOROTIC CORN.

(*A PROGRESS REPORT.*)

W. H. DAVIS.

During the last few years, much attention has been given to a plant disease known as chlorosis. This disease has been described in many plants, the most which are of economical importance, as Mosaic of Tobacco (6) "White Pickle," Peach yellows, etc.

Chlorotic corn plantlets have been noticed by growers for a number of years but very little work if any has been published concerning this disease in corn. Kernels from an ear of Reid's yellow dent corn were planted, and about one-third of the plantlets were chlorotic either throughout the whole plant or some of the lower leaves. This observation led to a second planting from the same ear. On December 13, 1916, fifty kernels from this ear were planted in compost soil in the greenhouse. Eleven plantlets out of thirty-eight were chlorotic; four had no chlorophyll; three had the first leaf (above the sheathing leaf) chlorotic; the other four varied, having two to three chlorotic leaves. The following questions now arise. Is this disease transferable when other plants come in contact with diseased leaves? Can it be transferred by aphids through transferring quantities of sap? How serious is this disease to corn plantlets?

On January 14, 1917, the plantlets that were chlorotic were loosely bound in contact with chlorotics. Proper care was taken against transferring the organism by aid of a string or by personal contact. Marked surfaces of leaves on chlorotic plants were washed with sterile water then pierced with a sterilized needle. This needle was then used to transfer the supposed organism and the fluid by piercing a washed surface on a marked leaf of a non-chlorotic plant. Five of such transfers were made on each of five non-chlorotic leaves on five plantlets. Proper precautions were observed in flaming the needles, tweezers and not handling with hands. In six weeks and two days after planting, all four of the chlorotic plants had died and wilted to the ground.

The roots appeared to be normal. All other plants and checks seemed healthy. On March 20, all the living plants possessed no visible symptoms of chlorosis. The chlorotic leaves had withered and died after living about two weeks. But one case was noticed where new leaves seemed to contract the disease from the chlorotic leaves or stem below. Each leaf that appeared possessed less of the disease until finally it showed only in the midrib.

A more intensive field study on a more extensive scale will be made this year to ascertain how prevalent this disease is and its economic status, if any.

Conclusions seemingly warranted:

1. Corn embryos may be chlorotic.

2. Chlorosis in corn plants may not be transferred to other corn plants by contact or by sap.

3. When corn plantlets are entirely chlorotic, they will not mature.